

REMARKS

Following entry of the above amendment, claims 1-8, 11-45, 47-53, 74-82, and 97-109 will be pending. Of these, claims 3, 7, 8, 13-18, 24, 26-29, 39-42, and 51 stand withdrawn from consideration. Claims 9, 10, 46, and 83-96 have been canceled. Independent claims 1, 36, 47, and 74 have been amended to more clearly describe the claimed invention. Claim 1 has also been broadened, by changing "at least one strain gage" to "at least one means for measuring deformation." Claims 11, 20, 25, 31, 32, and 97 have been amended to conform to the changes in claim 1. Claims 78 and 82 have been amended to address indefiniteness issues. Claims 100-109 have been added.

Information Disclosure Statement

An additional Information Disclosure Statement is included herewith, making of record additional references.

Claims Not Addressed in Detailed Action

Claims 97-99 are indicated in the Office Action Summary as rejected, yet are not addressed in the detailed action. Clarification of the status of claims 97-99 is requested.

Indefiniteness Rejections

Claims 78 and 82 stand rejected under 35 USC 112, second paragraph, as indefiniteness. In response, the claims have been amended to provide sufficient antecedent basis for the limitations in question.

Prior Art Rejections

Corser

Claims 1, 2, 4, 11, 12, 19-21, 30-38, 43-45, 47-50, 52, 53, and 74-79 stand rejected under 35 USC 102(b) as anticipated by Corser et al., U.S. Patent No.

4,986,135 ("Corser"). Claims 5 and 6 are rejected under 35 USC 103(a) as obvious over Corser. Withdrawal of the rejections is respectfully requested for at least the following reasons.

Corser, in its most relevant embodiment, describes a flow meter 170 that includes a nozzle 180 that is placed in a conduit 172. As Corser describes it, "[t]he nozzle 180 is cantileveredly supported from its inlet and projects outwardly into reservoir 182 so that the outer periphery of the nozzle is immersed within the fluid." The nozzle 180 is "structurally equivalent" to a nozzle 52 of another embodiment, which has a thinned section 74, upon which strain gages 82 are placed. The strain gages 82 are covered by a thin steel sleeve 88. According to Corser, as flow goes through the nozzle, the thinned throughput region 74 elastically deforms circumaxially and longitudinally proportional to the varying fluid flow through the nozzle. Corser does not describe a pressure transducer or a device that would be suitable for measuring static pressure. Corser also does not describe a device for unobtrusively measuring pressure in a pipeline.

Claim 1 as amended recites a pressure transducer for measuring pressure in a pipeline, the transducer including, *inter alia*, a sensing tube allowing flow therethrough, wherein the sensing tube has a substantially uniform cross-section for maintaining substantially unobstructed continuous flow through the pipeline and the sensing tube when coupled to the pipeline, and at least one means for measuring deformation on the sensing tube for measuring deformation of at least a portion of the sensing tube that locally bulges in response to pressure. Corser does not teach or suggest the pressure transducer of claim 1 at least because: 1) Corser's device is a flow meter rather than a pressure transducer, and would not be suitable for use as a pressure transducer; and 2) Corser's device does not provide an unobstructed flow through the pipeline and the sensing tube, when the sensing tube is coupled to the pipeline.

Corser's device is described as a fluid flow meter, from the title of Corser on throughout the description of Corser. It is specifically described as "an improved meter

to measure fluid flow" and as "a fluid flow meter." Col. 2, line 32; col. 1, line 56. It is immersed with the fluid, so that it produces an essentially zero output signal in the absence of fluid flow. See col. 4, lines 47-68. Indeed, one of the stated objects of Corser is to provide a fluid flow meter that does not need to withstand static fluid pressure. Col. 1, lines 55-58. Going beyond that, Corser's flow meter is not even affected by static fluid pressure. Col. 5, line 67 - col. 6, line 1. Clearly a device that does not respond at all to changes in static fluid pressure is not properly termed a pressure transducer.

Moreover, a distinction has already been made by the Office in this application between pressure transducers and flow meters. Restriction was required, in an Action dated June 4, 2003, between claims drawn to pressure transducers and claims drawn to flow measuring devices. The requirement based on this distinction was acquiesced to by Applicants, only to have this distinction neglected in applying prior art to reject the claims. The distinction between pressure transducers and fluid flow meters is real, as is discussed in the preceding paragraph. Fairness dictates that such a distinction should be applied uniformly, rather than being first applied and then neglected, both times to Applicants' disadvantage.

Further, claim 1 has been amended to specify that the sensing tube maintains substantially unobstructed continuous flow through the pipeline and the sensing tube, when coupled to the pipeline. Corser's nozzle 180, part of the flow meter 170, necessarily creates a flow obstruction. Thus Corser does not teach a sensing tube with the recited unobstructed continuous flow. Nor could Corser reasonably be modified to provide unobstructed flow. To do so would be to subject Corser's thin wall regions 74 and 76 to static pressure, which is contrary to one of Corser's stated objects, "to provide a fluid flow meter that can be constructed with a very thin-walled nozzle, which does not need to withstand fluid static pressure," col. 1, lines 55-58.

To sum up, Corser's flow meter is not a pressure transducer, and does not teach or suggest the recited pressure transducer. Therefore claims 1, 2, 4-6, 11, 12, 19-21,

and 30-35 are patentable over Corser.

Independent claims 36 and 74 as amended recite pressure transducers having the same or a similar sensing tube as that recited in claim 1. Therefore claims 36-38, 43-45, and 74-79 are patentable over Corser for the same reasons given above with regard to the patentability of claim 1.

Claim 47 recites a method of measuring fluid pressure in a pipeline, including installing a sensing tube in line with a pipeline, such that substantially unobstructed flow is provided from the pipeline, through a flow passage of the sensing tube, and back into the pipeline. As discussed above with regard to claim 1, Corser does not teach or suggest providing unobstructed flow in a sensing tube. Thus Corser does not teach or suggest all of the recited features of claim 47, and claims 47-50, 52, and 53 are patentable over Corser.

Combination of Corser and Sakai

Claims 22, 23, 25, and 80-82 stand rejected under 35 USC 103(a) as unpatentable over Corser in view of Sakai et al., U.S. Patent No. 5,949,118 ("Sakai"). Withdrawal of the rejections is respectfully requested for at least the following reasons.

Sakai discloses an etching method for silicon substrates, such as for forming thinned portions of semiconductor sensors (e.g., pressure sensors or acceleration sensors). Sakai does not disclose methods or configurations for regions receiving strain gages.

Sakai does not remedy the deficiencies of Corser regarding teaching or suggesting the recited features of claims 1, 36, 47, and 74. For this reason alone claims 22, 23, 25, and 80-82 are patentable over Corser and Sakai, either alone or in combination.

Further, Sakai is concerned with the problem of making very small thinned regions, for example involving a 300 μ m-thick semiconductor wafer (col. 18, lines 28-32). Sakai does not teach or suggest applying strain gages to its thinned regions – to

do so would be absurd. Nor would any of Sakai's teachings be applicable to the far different situation of producing sensing tubes for measuring pressure in pipes. Sakai is simply non-analogous art, and claims 22, 23, 25, and 80-82 are patentable over Corser and Sakai for another reason.

Newly-Added Claims

All of the newly-added claims 100-109 are believed to read upon elected species.

New dependent claims 100-104 are patentable over Corser for at least the reasons given above for the patentability of their base claims. In addition, claims 101 and 103 are believed to be patentable over Corser for at least the additional reason that Corser does not teach or suggest a sensing tube that is mechanically constrained at opposite axial ends.

New independent claim 105 recites a pressure transducer that includes a sensing tube that is mechanically constrained at opposite axial ends of the sensing tube. Claim 105 is believed to be patentable over Corser at least because Corser does not teach or suggest a pressure transducer, and because Corser does not teach or suggest a sensing tube that is mechanically constrained at opposite axial ends.

Conclusion

In view of the foregoing, withdrawal of the rejections and objections is respectfully requested, in which case the application would be in condition for allowance.

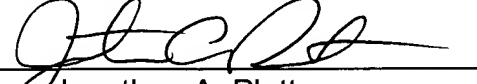
Should the Examiner believe that a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact Applicant's undersigned attorney at the telephone number listed below.

A check in the amount of **\$620.00** is enclosed as the filing fee for the Request for Continued Examination, and in payment of a two month extension of time. Should any

additional fees be due as a result of the filing of this response, the Commissioner is hereby authorized to charge the Deposit Account No. 18-0988, Order No. KICHP0102USA.

Respectfully submitted,

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